

DIOS MultiArb

Arbitrary Waveform Generator

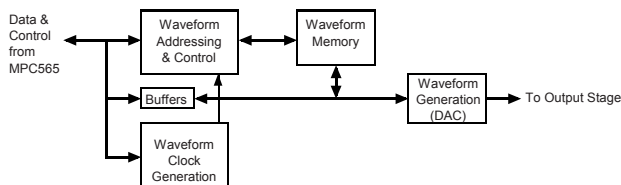


Description

Hardware-in-the-loop simulation often requires the generation of specific waveforms to replicate signals that would exist in real applications. For example, an engine controller may require the pulse from the magnetic pick-up transducer that detects the passage of the magnetic spot on the flywheel. A simulated engine determines the pulse timing, but the interface must generate the actual signal to the controller. The replication of the actual transducer signal is required, including changes in the pulse characteristics with RPM.

The DIOS MultiArb combines 8 channels of arbitrary waveform generation with an MPC565 microcontroller to both control the arbitrary waveform generation function and to provide a wide range of timing and analysis capability. Arbitrary waveform generation is fully programmable using a waveform memory bank for each Arb channel. Waveform generation is performed using the Direct Digital Synthesis (DDS) technique.

The DIOS MultiArb interfaces with the real-time simulator using IEEE-1394.



Waveform Generation

Software Support

The DIOS MultiArb is supported by ADvantageDE routines and logical devices that allow simulation variable to be connected to board functions such as waveform control.

Features

- 8 channels analog arbitrary waveform output
- 32 channels of TPU digital for timing and analysis
- Software-controlled frequency, gain
- 64K word memory per channel divisible into eight memory banks for changing waveforms during a real-time simulation run
- No run-time load on primary computing resources
- Distributed I/O System (DIOS) board form factor
- IEEE-1394 interface to main simulation computer

Specifications

Sampling rate range: 0 to 10.0 megasample/sec
 Sampling rate resolution: 0.0037 Hz
 Sampling rate accuracy: 0.01%

Waveform Memory

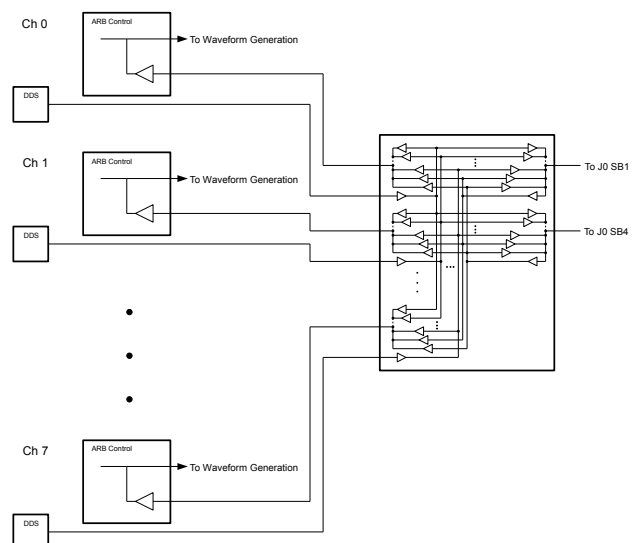
Memory size: 65,536 words
 Number of memory banks: 1, 2, 4, or 8

Analog Voltage Output

Channels: 8 analog waveform outputs
 Waveform voltage range: +/- 10 volts
 Maximum current: +/- 20mA, current limited

Digital Outputs

Channels: 32 channels / 2 TPU
 Voltage: TTL-compatible voltages,
 Direction: Bidirectional in groups of 8
 Mechanical/Electrical: DIOS board with IEEE interface



Waveform Clock Generation

Distributed I/O System